Geophysical Research Abstracts
Vol. 18, EGU2016-12483, 2016
EGU General Assembly 2016

Towards a new tool of wind speed and wind direction verification

Manfred Dorninger
University of Vienna, Department of Meteorology and Geophysics, Wien, Austria (manfred.dorninger@univie.ac.at)

During MesoVICT the verification of 2D-surface wind fields will receive special attention. Vector fields like wind are more complex to verify than scalar quantities. It is common approach to verify the single scalar components with traditional verification measures. This makes an overall and easy to understand interpretation of wind speed and direction verification difficult. Alternatively only wind speed is verified, which is useful for evaluating wind storms or estimating wind power. Wind direction is rarely verified. Although it is an important quantity for e.g. the correct frontal position, in the case of forest fires or during landing procedures of airplanes.

In this presentation a new and simple verification procedure is introduced dealing with wind speed and direction. It is a grid-point based scheme but can be applied for spatial, for temporal as well as for ensemble forecast evaluations. In a first step differences of forecasts and observations of wind speed and direction are calculated and are filled in a specific scatter plot in a polar coordinate system. The different quadrants of the scatter plot can be interpreted in the following way (quadrants are counted anti-clockwise):
I) Forecasted wind direction is rotated too anti-clockwise (directed towards the cyclone center), wind speed too high
II) Forecasted wind direction is rotated too anti-clockwise, wind speed too low
III) Forecasted wind direction is rotated too clockwise, wind speed too low
IV) Forecasted wind direction is rotated too clockwise, wind speed too high

To reduce the information of the point cloud the centre of gravity is determined and radii containing 10%, 25%, .. are defined which represent another verification measure. Several examples and possibilities of a statistical evaluation of these difference scatter plots will be presented during the conference.